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report on the ZIL Automobile Plant in Moscow

The report describes the layout of the plant and the types of vehicles produced by the plant, including military vehicles. Plant production figures are included in the report. Attached to the report are sketches of several vehicles produced in the plant and a sketch of the plant layout.

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Attachment

ZIL AUTOMOBILE PLANT IN MOSCOW

Identification, Location, and Description of Plant

1. The ZIL Automobile Plant on Avtozavodskaya ulitsa, Proletarskiy Rayon, in Moscow was subordinate to the Ministry of Automobile and Tractor Industry. The plant comprised forty-four buildings, thirty-three of which were directly concerned with production. Three of the latter were restricted shops. Construction of additional buildings was planned. The irregular, 11-kilometer enclosing wall was of wood about four meters high, excepting the frontage on Avtozavodskaya ulitsa, which was composed partially of brick and cement seven meters high and partially of a four-meter-high iron grating.

Description of Plant Building and their Functions

2. The numbers in parentheses correspond to the numbers on the sketch of the plant layout on page 25 .

(1) Foundry No. 1, located in a three-story, brick building with metal roof framework, 60m x 60m. The side of the building facing Avtozavodskaya ulitsa was entirely of glass. The first and second floors were occupied by the foundry, which smelted aluminum, copper, brass, and bronze used in carburetors, push button and other parts [redacted] The foundry contained several gas-fired furnaces without smoke stacks and well-maintained Soviet-made machinery. Special presses were used in casting aluminum to prevent porosity. Electrical parts castings were sent by truck to building No. 15. [redacted] The foundry employed 300 men on each of three shifts. [redacted] The third floor of the foundry building was occupied by laboratories, offices, the Red Corner, snackbar, library, and other facilities.

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(2) Foundry No. 2, a one-story, 300m x 60m brick building, 15 meters high, with a glass roof and several iron smoke stacks projecting two to three meters above the roof. It had a basement which was used for sand and residual material. Foundry No. 2 smelted iron and steel for engine blocks, piston rings, valves, and connecting rods. It was equipped with two well maintained, three-carbon electrode furnaces. Each furnace had two conveyors. The molten metal was first poured into containers carried by an overhead conveyor and then into molds on a chain conveyor. The foundry also had Soviet-made lathes, milling machines, and other machine tools for repairing shop equipment. Castings from foundry No. 2 were sent by conveyor to building No. 8 and to shop No. 4. The foundry employed about 300 workers on three shifts.

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(3) Foundry No. 3, locatediin a 150m x 100m, 20-meter high brick building which had a metal roof with a large skylight. The north quarter of the building had three floors; the remainder had only two, the second being incomplete to allow space for cranes traveling. Foundry No. 3 occupied the first floor and it cast engine blocks, pistons, connecting rods, cylinder heads, and other parts. It was equipped with three Soviet coal and coke furnaces for iron and steel smelting, several Soviet vibrators for preparing molds, and two 70-ton overhead traveling cranes for feeding the furnaces and transporting molten metal. In the basement, machine tools were installed for repairs; there were also ventilators for carrying off exhaust gases and dust, as the building did not have any chimneys. About 2,000 workers were employed in three shifts. 25X1 On the second and third floors of this building 25X1 were located offices, laboratories, dressing rooms, the Red Corner, library, and dining room.

(4) Foundry No. 4, a one-story, 100m x 50m brick building. Reinforced concrete columns supported the metal because of the glass saw-toothed roof. A brick smokestack projected 15 meters above the roof. Foundry No. 4 was not concerned with mass production, but supported all the sections. It worked special pieces to repair machine tools. 25X1 There were 450 workers employed on three shifts.

(5) Model-making shop, which occupied three stories of a four-story, 150m x 40m, 25-meter high brick building. The glass and metal saw-toothed roof was similar to that of building No. 4. The model-making shop supplied plaster, wood, and metal molds to the four foundries (Nos. 1, 2, 3, and 4). The fourth floor contained offices, restaurant, showers, library, and the Red Corner.

(6) Machine Shop No. 4, a one-story brick building, 50m x 50m, and 12 meter high with a metal and glass saw-toothed roof. The shop assembled the differential rear axle, and entire car chassis including the wheel rim and the forward differential in certain vehicles. The shop was equipped with a large quantity of well maintained, Soviet and Foreign made machine tools, such as lathes, planers, and milling machines. The products were sent by conveyor belt to machine assembly shop No. 1 (No. 7b). There were three work shifts 25X1 The building had a small second story along the east side, covering about one-fifth of the surface area and housing the offices, Red Corner, restaurant, library, and showers.

(7) Tempering shop, machine assembly shop No. 1, and shop No. 4, located in a brick building, 300m x 300m, and 15 meters high with a glass and metal saw-toothed roof. Most of the building was of one story, excepting the old part, which had three floors; the second and third were used for the offices, laboratories, Red Corner, restaurant, and library.

(a) The tempering shop processed almost all the automobile parts excepting the crank-shafts. The shop was equipped with ten well maintained, Soviet tempering furnaces: Eight were gas

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and two electric. One of the electric furnaces had a container of molten lead, for special hardening processes. There were also some acid cells, and lathes for shop repairs. The tempered parts were distributed among the various shops by light towing trucks with electric platforms. 25X1 there were no more than 100 employees working each shift. 25X1

(b) Machine Assembly shop No. 1 completely assembled trucks types 150 and 151. It received partially assembled parts from the following shops.

Part	How received and condition	Shop from which received
Front and rear axles	by electric platform	machine shop No. 4 (No. 7c)
Engines	by conveyor belt; assembled and tested	machine shop No. 3 (No. 8b)
Gear boxes and clutches	by conveyor belt	machine shop No. 4 (No. 8a)
Truck cabs and bodyworks	by aerial cable; painted and finished	bodywork shop (No. 20a)
Chassis and fenders	by truck; painted and finished	stamping shop (No. 19a)
Electric lighting apparatuses and starter		main electrical section (No. 15a)
Batteries	by truck	battery shop (No. 27)
Springs	by truck	shock absorber shop (No. 17a)

Assembly shop No. 1 was equipped with lathes for final adjustments of the parts and a large number of blocks and tackles to to facilitate the assembling of engines, chassis, axles, and heavy parts. The trucks were tested in the plant area and returned to this shop if there were any adjustments needed. Once good performance was demonstrated, they were driven to the railroad station next to the plant and shipped by train. The shop employed 100 workers on each of the three shifts.

(c) Machine shop No. 4 finished the pinions, rear axle shafts, and planetary transmissions, and completely assembled the front and rear axles of various vehicles produced by the plant. The shop was equipped with Soviet, German, and Swiss machines such as lathes, milling machines, boring mills, planing machines and saws. The shop worked three shifts.

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(8) Machine and motor shops building. This was a 300m x 200m, two-story brick building containing several shops. It had a glass and metal saw-toothed roof and a large basement used for storing tires, radio and radar apparatuses, and electrical parts. Trucks continually delivered and picked up equipment from the basement. In 1946 or 1947, all the materials stored in the basement were destroyed by fire, however the building itself was not damaged. The first floor of building No. 8 housed machine shop No. 4, machine shop No. 3, a tempering shop, motor shop No. 1, motor shop No. 2, and the firemen;s barracks. The second floor housed the guards' barracks, known as No. 100 in all plants; the central telephone switchboard, laboratory for photographic reproduction of planned construction, several laboratories related to first floor production, offices, dining room, libraries, showers and dressing rooms. About 4,000 workers were employed on three shifts.

(a) Machine shop No. 4 assembled motor parts. The shop was equipped with well-maintained, Soviet and foreign machinery, such as lathes, milling machines, boring mills. The assembled parts were sent by conveyor belt to motor shop No. 1.

25X1

(b) Machine shop No. 3 probably complemented the work done in machine shop No. 4. 25X1 machinery, but it was similar to that in shop No. 4. the parts were sent by conveyor to motor shop No. 1

(c) The tempering shop hardened many parts, principally crankshafts. It was equipped with several gas furnaces and some machine tools for shop repairs. The crankshafts and the other other tempered parts were sent on electric platforms to motor shop No. 1 and possibly to other shops. 25X1

(d) Motor shop No. 1 carried out the first step in semifinishing and assembling the truck motors for types 150 and 151. The shop had the usual machinery: grinders, emery-machines, boring mills, lathes, and milling machines. The semiassembled motors were sent by conveyor to motor shop No. 2. 25X1

(e) Motor shop No. 2 completed the assembling of the truck motors for types 150 and 151. It was equipped with the same kind of machinery as motor shop No. 1. The completed motors were carried by aerial conveyor to machine assembly shop No. 1 in building No. 7. 25X1

(9) Machine and nickel-plating shops. This was a two-story, brick building, 300m x 100m with the same type of roof as the other buildings. On the first floor were installed an unidentified machine shop, a polishing and nickel-plating shop and a large, unidentified laboratory. The second floor was used for another laboratory, offices, library, dining room, infirmary, and Red Corner.

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(a) The machine shop assembled small parts for motors and other vehicle parts. The shop machinery was similar to the machinery used by other machine shops, but smaller in sizes. 25X1 there were three work shifts.

(b) The polishing and nickel-plating shop polished and plated automobile parts such as bodywork, hubs, and cromework. The shop had a great number of well-maintained, Soviet polishing machines and different kinds of electrobaths. The parts to be plated were transported by conveyor belts and automatically passed through various electrobaths which used high amperage, low voltage current. The shop was also equipped with a small amount of machinery for shop repairs. The products were sent to different locations: some, to the basement warehouse in building No. 8; some, which were to be used on luxury cars, were sent to restricted building No. 13; some, to the bus section in building No. 11 and others to the refrigerator shop in building No. 39. 25X1

(10) Machine shop and warehouse. This was a two-story, brick building, constructed in 1951. The first floor was 200m x 150m and had a metal and glass saw-toothed roof. The second story was 200m x 15m and had a horizontal, concrete roof; it housed the laboratory, offices, dining room, library, showers, red corner, and infirmary.

(a) The machine shop manufactured screws, nuts, washers, tap bolts, rivets, and nails in all sizes necessary for plant production. The shop had a great quantity of machinery, both manual and automatic. The products were distributed to the different buildings by truck and the surplus was stored in the 25X1

(b) Warehouse which partially occupied the first floor. The machine shop employed 500 workers on one shift each day.

(11) Machine shop No. 6 and bus section. This was a two-story, brick building, 150m x 150m. The first-story roof was of the same construction as the other buildings, while the second story, which was much smaller, had a terrace-like roof of concrete slabs.

(a) The first floor was partially occupied by machine shop No. 6, which was semi-restricted. A special propusk had to be shown at the shop entrance where there were two guards stationed. 25X1 The production was not in series. the parts were sent to other restricted shops or shipped outside the plant. Machine shop No. 6 manufactured 2,000 bicycles daily, 25X1 this production was established in order to dissemble its other functions. It was equipped with a great quantity of new, Soviet 25X1 machinery, some of which special equipment. The shop worked only one shift, but the bicycle worked three. 25X1

(b) The bus section with its small painting shop was separated from the machine shop by a wall. The shop completely assembled the buses. The finished buses were tested and then shipped by rail.

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The volume of production was about 50 buses per day. Two hundred persons worked three shifts daily. The second floor had two parts: one which corresponded to the machine shop and contained its laboratory and offices, and the other which corresponded to the bus section and contained offices and an upholstery department.

(11bis) Near building No. 11 were some subterrean storage sites for paint.

(12) Tool shops This was a 100m x 60m, brick building; the north and east sides of which were glass. The main part of the building was one-story with a glass roof and contained tool shops, Nos. 1, 2, and 3. The rest of the building had five floors with a roof of concrete slabs and contained the head planning office, the tool shop offices, laboratories, libraries, showers, red corner, and other facilities. 25X1 25X1

(a) Tool shops No.s 1, 2, and 3 occupied the first floor, but were not separated by partitions. Together they constructed cutting tools, measuring and precision instruments, and all the machine tools necessary for plant production. The shop had different kinds of machines, mainly for precision work, which were Russian and other makes. the products were first stored in the same building and later taken to the plant shops or sent to affiliated installations About 3,000 persons worked three shifts. 25X1 25X1 25X1 25X1

(13) A restricted building. It was surrounded by a three-meter wooden fence topped by wire. There were guard posts in each exterior angle of the fence and a door which was heavily guarded. At night dogs were used and the area around the building was brightly illuminated. It was a 150m x 70m, one-story, building with a glass roof and glass walls, except for the south side which was brick. A small part of the building, adjoining the north side, had three stories. On the first floor there were shops and in the other part of the building, offices different kinds of disassembled cars could be seen from the nearby buildings. building No. 13 could have been copying foreign car models or some of their characteristics. 25X1 25X1 25X1

(14) Machine shop No. 7. This was a restricted building, surrounded by a three-meter, wood fence topped by wire. It was a two-story, 150m x 100m, 15 meter-high structure, built in 1950. The second story and the iron-trussed, concrete roof rested on concrete pillars and columns. The walls were glass with a 1.5-meter, brick base. The first floor was occupied by machine shop No. 7 which produced and assembled almost all the parts for the armoured trucks and assembled amphibian vehicles. The shop was directed and controlled by engineers and military officials. they were part of the automobile corps, because they wore an emblem of an automobile. At times a general was seen who probably acted as a liaison between this restricted shop and one of the ministries, possibly the Ministry of Defense. The shop produced seven or eight armoured trucks per day. The volume 25X1 25X1

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of production of amphibian vehicles was inferior 25X1
the construction of these vehicles was begun at the end of 1955 or at the beginning of 1956. 25X1
Five hundred persons worked one shift. The second floor was occupied by planning offices, laboratories, libraries, dining room, infirmary, red corner, and other facilities. 25X1

(15) Electrical engineering section, machine-tool section, and sheet metal shop. This was a one-story 300m x 200m structure. Adjoining the north and south walls were glass with a brick 1.5-meter base. Adjoining the east side was a two-story structure which contained offices, dining room, showers, infirmary, libary and red corner. 25X1

(a) The main part of the building was partially occupied by the head electrical-engineering section which constructed electrical apparatuses for automobiles, such as control panels, push buttons, switches, electric motor windings and electrical instruments needed by the plant. 25X1
The products were taken to other shops or stored in the basement of building No. 8. There were three shifts 25X1

(b) The machine-tool construction section also occupied the first floor of building No. 15. It manufactured machine-tools such as lathes, planers, boring mills, milling machines, and light presses. The shop manufactured enough machine tools to supply the plant needs and also exported tools to other countries, such as China. The products were delivered to the shops by truck and the surplus stored in the basement of building No. 8. The shop used new, Soviet, heavy machinery. 25X1 25X1

(c) The sheet metal shop produced large and small-diameter tubes, fan blades, and bodies for the plant ventilators and assembled them with the motors which were received from the head electrical engineering section.
the shop had bending rollers 25X1
guillotine cutters, and a large supply of electric and gas welding equipment. The products were taken to the different shops by truck. A hundred persons worked one shift. 25X1

(16) Heavy Machinery Shop. This shop occupied a one-story 60m x 50m, 18-meter high building. The gabled roof was of concrete slabs and the east and west walls were glass with a 1.5-meter, brick base. It was built in 1952 or 1953 as an amplification of the machine-tool construction section in building No. 15. It constructed heavy presses which 25X1
were shipped to China. The shop was equipped with new, Soviet, heavy machinery, and heavy capacity cranes. There was only one shift.

(17) Shock-absorber machine shop, semiassembling of amphibians. These shops occupied the first floor of a three-story, 300m x 200m,

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brick building constructed in 1950 or 1951. It had large windows and the main part of the building had a glass roof. The east side of the building had three stories in which were installed the laboratories, offices, dining room, infirmary, red corner, libraries, showers, etc.

(a) The shock-absorber and spring shop constructed and assembled shoch-absorbers with springs and telescopic tubes. 25X1 the shop also constructed dashpots. It produced 25X1 springs necessary fot plant machinery and production. The shop had few machine-tools, but had a large quantity of presses for stamping springs, and special machines for gauging the diameters of coil. There were also several gas tempering furnaces, which were equipped with conveyor belts. The shop supplied the plant needs and sent shock 25X1 absorbers to the small cylinder automobile plant in Moscow. There were three work shifts, except in the coil shop where there was only one.

(b) The shop for semiassembly of amphibians was installed in 1955 or 1956. It assembled the frame of amphibian vehicles which consisted of the chassis, the 10-wheel-three-axle drive, and the motor of each vehicle, but without a cabin or cover of any kind. The vehicles were driven to machine assembly shop No. 7 in restricted building No. 14 where they were finished. The shop operated experimentally 25X1 the volume of production was still not decided 25X1

(18) Shock-absorber shop. The construction of this building had not been completed by September 1956. 25X1 It was one story, 300m x 300m, 25X1 and about 20 meters high, and had large glass windows. It was said that another shoch-absorber shop was going to be installed in this building.

(19) Stamping shop and warehouse. This was a 300m x 250m, one-story building, about 24 meters high with a glass, saw-toothed roof. The north and south walls were glass with horizontal cement strips separating them, which gave the appearance of large windows running the length of the building. Adjoining the east wall was a three-story structure which was the same height as the rest of the building and which contained the laboratory, offices, dining room, shower, infirmary, and other facilities. The main part of the building contained the stamping shop, and a large warehouse for iron, steel, and aluminum sheets of different thicknesses.

(a) The stamping shop stamped the pieces necessary for plant production, particularly sheet metal for cabs and bodywork, armour for military vehicles, and the chasis in general. The shop was equipped with many well-maintained Soviet presses, stamping machines of various capacities, and a large number of electric welding machines. The stamping process was carried out automatically. 25X1 The welded and painted cabs were transported by aerial cable to the cab 25X1 assembly shop in building No. 20 and the chasis, by special

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25X1

truck to machine shop No. 1 in building No. 7. The unwelded armour parts were transported by truck to the armour assembling shop in restricted building No. 14. About 3000 persons worked three shifts in the stamping shop.

25X1

(20) Bodywork carpentry shop and cab assembly shop. This was a three-story, 100m x 60m, brick building, 15 meters high. The building had large windows and a gabled, metal roof. In the basement were installed machines for shop repairs and a warehouse.

25X1

The third floor housed the usual facilities: offices, showers, library, buffet, red corner and infirmary.

(a) The bodywork carpentry shop occupied the first floor. It constructed truck bodies and the wooden parts of the vehicles.

(b) The cab assembly shop occupied the second floor. It mounted the wooden parts on the cabs, doors, and floors. The cabs and bodywork were sent by an overhead conveyor belt to the second floor of machine assembly shop No. 1. There were three work shifts.

25X1

Bordering the south side of this building was a 100m x 50m openair storage site for wood.

(20) Machine assembly shop No. 52. This was a one-story, brick building 40m x 30m and five meters high. It had large windows and a gabled, metal roof. Machine assembly shop No. 52

25X1

This shop was highly esteemed by the plant administration because it was also in in charge of transforming all the elements of production for military equipment in case of war. The shop had the following Soviet-made machinery.

25X1

2 guillotine cutters for cutting sheet metal
3 universal drills
7 machine drillls
5 sheet metal-rolling machines, for making pipes
1 planning machine
1 stamping press
1 hydraulic drop hammer
2 electric shears
50 electric welding sets
15 gas welding sets

25X1

There were 100 electrical fitters, 100 sheet metal workers, and 100 pipe specialists. They usually worked one shift and were organized in mobile units which worked throughout the entire plant. There were 100 stationary machine operators who worked just one shift.

(22) Drop Forge shop.

(a) This occupied a one-story, brick building, 100m x 50m, with large windows and a glass, saw-toothed roof. A small part of the building on the west side had a second floor where offices, showers, infirmary, and other facilities were installed.

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25X1

The drop forge shop [redacted] constructed different kinds of dies and matrixes for stamping-presses and for forges. The products were taken by truck to the forging and stamping shops. The shop was equipped with many planers, universal lathes, turrets, boring mills, and milling machines. [redacted]

25X1

(23) Drop forge shop. This was a one-story, 50m x 30m brick building with a glass, saw-toothed roof. The north and south walls were glass with a 15-meter brick base. The drop forge shop constructed large dies for stamping H or U beams for the chassis, dies for forging crankshafts, and molds for air pressure-smelting aluminum. The dies were sent by truck to the stamping and forging shops and the aluminum molds, to foundry No. 1 in building No. 1 The shop had a large quantity of machinery [redacted]

25X1

(24) Pipe shop. This was an old building, reconstructed with concrete pillars and an iron roof frame to support the metal roof. It had one story, was 40m x 30m, and eight meters high. The pipe shop constructed pipes from sheet iron for making bicycles and exhaust pipes. The shop had only one machine which automatically rolled the sheet metal into tubes and then welded them. This machine was of the most recent Soviet manufacture. It was 25 meters long, 1.5 meters wide, and 1.20 meters high. [redacted]

25X1

The shop had a large and complex control panel. The shop was directed and controlled by only one worker. Four or five persons worked one shift. The bicycle tubes were transported by truck to the bicycle section in semi-restricted building No. 1. [redacted]

25X1

(25) Shop for drawing and gauging rods and wire. This was an old, 50m x 60m, 15-meter-high, brick building with a metal roof and large windows. It was reconstructed with concrete columns and an iron roof frame. The shop stretched and gauged rods and wire of wrought iron. It was equipped with five or six special machines with horse power ranging from 50 to 100 MT. for realizing this process: the wire or rods were caught by one end in a vice and were then passed through a matrix which both gauged and hardened them. They were then taken in rools or bundles by electric platforms to the warehouse in building No. 8 where they were submerged in vats containing a liquid [redacted] the rods and wire [redacted] were sent to the nails, screws, and bolts shop in building No. 10. Building No. 25 was also equipped with several cranes and some lathes. There were three work shifts [redacted]

25X1

25X1

(26) Forge shops Nos. 1, 2, and 3. This was a one-story, brick building with a gabled, metal roof. The lateral walls were glass with a 1.5 meter-high, brick base. The building had three wings which were joined by a fourth wing at the northern

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extremity. The three principal wings measured 400m x 40m each and were not less than 18 meters high. Beneath each wing was a tunnel where the steam pipes for the drop hammers were installed.

Forge shop No. 1 was located in the west wing. It forged light parts, particularly instrumental, such as wrenches, pliers, etc. The shop was equipped with 25 small drop hammers, several gas-oil furnaces to heat iron and two cranes. Part of the products were sent to the tool shop in building No. 12. 25X1

Forge shop No. 2 was located in the central wing. It forged inter-mediate automobile parts 25X1 and also some washers with a diameter of from 250 m/m to 100 m/m and a thickness of 25 m/m. The shop had several hammers with intermediate horse power, several gas-oil furnaces for heating the materials, two cranes, and several powerful shears. 25X1

Forge shop No. 3 was located in the East wing; it was constructed in 1951 or 1953 and was the newest part of the building. It forged heavier parts, particularly crankshafts of different sizes. The shop was equipped with 10 powerful drop hammers with a gas-oil furnace for each one, two cranes, and several guillotine cutters for cutting iron billets to a thickness of 1.80 m/m. Before leaving the building the products manufactured in the three forge shops passed through an emery section where burrs were removed and were then taken by truck to machine shop No. 4 in building No. 8. All the shops had three shifts and there was a large number of workers. 25X1

(27) Battery and electric car repair shops. This was a two-story, 150m x 50m, building with a gabled, metal roof. The north and south walls were glass with a 1.5 meters, brick base. There was a basement garage for the electric cars and platforms. The battery shop occupied the first floor. It charged old and new batteries made in an affiliated Moscow plant 25X1 The new batteries were taken by electric car to machine assembly shop No. 1 in building No. 7. 25X1 25X1 There were three shifts. On the second story were installed laboratories, with many electric furnaces; offices; infirmary; library; red corner; dining room; and also a small shop for repairing and winding electric cars. This shop was equipped with various Soviet-made machine-tools. It employed few workers and 25X1 there was just one shift.

(28) Boiler room. This was a one-story, 80m x 70m, building, about 20 meters high. The north and south walls were glass with brick bases. About eight meters from the north side of the building was a 60-meter-high, brick chimney which was the draught for the two boilers housed by the building. The steam pipes were installed in the basement.

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The boiler room supplied steam pressure to forge shops Nos. 1,2, and 3 in building No. 26, and steam-heated the entire plant. The shop had two steam turbines which continually generated electricity for supplying the battery shop in building No. 27, and for several other shops equipped with hand tools. In case of emergency, this building supplied electricity to the entire plant, using only the two boilers and two alternating-current generators geared to transform the current at any moment. The generators used ground coal and oil. The shop was equipped with the following well-maintained, Soviet machinery:

2 tubular boilers
2 steam turbines
2 alternating-current generators
2 coal-grinders

25X1

(29) Oxigen Bottle Repair shop and electrodes shop. This was a one-story, 80m x 50m, 10-meter high brick building with a metal roof, and large windows. 25X1 It housed a shop for repairing and charging bottles 25X1 of oxygen and compressed acetylene used for welding, and also a small shop for producing welding electrodes. Both shops worked only one shift.

(30) Sawmill and warehouse. This was a one-story, 80m x 60m, 10-meter high, brick building with a metal roof and large windows. The sawmill cut rough wood into planks for truck bodywork. The shop was equipped with the following well-maintained, Soviet machinery: 20 disc saws, 20 planers, and some hot steam dryers for drying the planks. The sawed wood was either stored in the building or taken by truck to the bodywork shop in building no. 20. There were three shifts 25X1

(31) Unidentified. there was a kind of shipyard within the building for the construction of barges with and without motors. It had a small port.

(32) Power transformer. This was a 70m x 70m, 15-meter high, brick building with a metal roof. The north wall had large windows and many iron doors. Entrance to the building through other doors 25X1 was prohibited. the building had two stories, It housed the sub-station power transformer with the corresponding control switches.

(33) Administration building. This was four-story, 50m x 50m, house occupied by the offices of the plant director and administrators. 25X1

(34) Carpenter shop. This was a two-story, 50m x 30m brick house without interior columns and with a metal roof. It was old and poorly maintained. The first floor housed the carpenter shop and two or three small store rooms for construction for construction materials. On the second floor were installed the offices, dining room, library, red corner, and other facilities.

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The carpenter shop constructed windows and doors and repaired or constructed furniture for the plant dining rooms, offices, and other facilities. The shop was equipped with a small amount of standard machinery [redacted] 25X1
Five-hundred carpenters, painters, and brick layers worked one shift.

(35) Warehouse for machine assembly shop No. 52. This was a large one-story, brick shed, 40m x 20m and seven meters high, with a metal roof. In this warehouse were stored altimeters, ammeters, cables, wire, and many other kinds of electrical equipment as well as mechanical parts, such as rollers and standard bearings, 25X1
necessary for the assembly or installation of plant machinery. 25X1
[redacted] the warehouse [redacted]
[redacted] was usually full.

(36) Garage. This was a one-story, brick building, 250m x 200m, and 15 meters high, with a metal roof and large windows. The plant trucks were parked in the garage which also had a small shop for truck repair and a gasoline and oil pump. At one side, there was a small parking space for the passenger cars of the plant director and principal chiefs. The majority of the eight hundred trucks kept in the garage were three ton trucks, bot some were from six to eight tons and almost all had the trade-mark "ZIS"; however there were some acquired before World War II which were trademarked Studebaker, Ford, and Mack. These 800 trucks were used to deliver raw materials to the plant. Several trailers were used, especially for the delivery of tires. The garage also enclosed buses for service throughout the installation and about 50 very small trucks which pulled from two to three trailers with a total displacement of 1.5 tons.

(37) Construction shop. This was a one-story, 40m x 30m brick building, constructed in 1956. The structure had large windows and a roof of cement planks covered with coal-tar pitch for water proofing. The construction shop repaired, assembled, and adjusted elevators, tower cranes, concrete-mixers, vibrating sieves, and all the equipment which pertained directly or indirectly to the building of residences for plant personnel and their families. The shop was equipped with three universal lathes, one planer, one horizontal and one vertical milling machine, a cutting and stamping press, several grinding machines, five electric welding sets and two gas welding sets. Fifty persons worked one shift.

(38) Railway repair shop. This was a one-story, 50m x 40m brick building, 15-meter high constructed in 1952. The east and west walls were glass with 1.5 meter-high brick bases. The shop repaired the plant railroad equipment; such as tracks, signals, etc. The 25X1
building was traversed by a railway with two north-south spur lines. [redacted]

(39) Emery-stone shop and refrigerator shop. This was an old, one-story, 60m x 50m, 12 meter high building, reconstructed in a manner similar to the other buildings. It had large windows on all sides and a metal roof.

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(a) The emery stone construction shop supplied the plant with stones of different characteristics and forms. 25X1 the stones were generally used to cut iron or steel billets, to hew, and also to polish. The shop 25X1 employed 80 persons on one shift.

(b) The refrigeration shop constructed cold storage rooms of a medium capacity for restaurants, dining rooms, and other facilities, and standard refrigerators, which were sold commercially in Moscow. These refrigerators were produced in series, The shop 25X1 employed 500 persons on three shifts.

(40) Funeral chapel, club, library, and theater. This was an old, three-story, 50m x 50m, building. The first floor was used as a funeral chapel for workers who died and were worthy of distinction. The second floor was used for the club and theater; and the third, for the library.

(41) Technical and apprentice schools. This was an old, well-mainted 60m x 60m building with four stories, many windows, and a metal roof. It's four floors were occupied by both schools and were divided by walls. The basement was for the instruction and practice of sports such as football, boxing, wrestling, and gymnastics for plant employees and students who wished to participate.

The technical school taught plant workers to improve their standing or enabled them to become technicians in any of the specialized fields needed in the plant, especially electricians and mechanics. The studnets had five hours of classes each day, after the completion of their work shifts. There were laboratories and machinery for practical studies. 25X1

The apprentice school was attended by youth who aspired to different professions, however it was not necessary for students to be sons of plant employees. The school had laboratories, shops, and all the necessary equipment for practical training. For admittance to the school which was by examination, it was necessary to have finished 25X1 the 7th grade. The course lasted two years.

(42) Party committee, komsomol, and sports club. This was a new 30m x 20m two-story structure with many windows and a metal roof. It housed the offices of the Party committee, the plant Komsoml, the labor union committee, and the administration of the sports club "Torpedo".

(43) Main dining room. This was a 150m x 60m, one-story, wooden building with wooden columns and a metal roof, painted brown like all the roofs of this type. The walls were painted grey outside and white inside. There was a small basement for storing food stuffs. The main dining room was a large restaurant which had a great variety of food and apperitives, available for plant employees as well as 25X1 for persons who did not work in the installation.

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(44) Policlinic. This was a 100m x 70m, five-story building of modern construction, built in 1956. [redacted] it had a basement [redacted] There were several elevators and ambulances. The policlinic was exclusively for the treatment of plant employees. It had a large capacity and it was said that it had modern equipment. 25X1

(45) Facilities for forge shops Nos. 1, 2, and 3. This was a new 100m x 50m, two-story building, built in 1956. In the first floor were installed showers, dressing rooms, library, and red corner and on the second floor, a large dining room. These facilities corresponded to forge shops Nos. 1, 2, and 3.

(46) Kennel area. This was a 30m x 40m lot occupied by individual dog kennels where the plant watch dogs were bred and trained. The area had kitchens and electric wiring and was enclosed by a wooden bench.

(45 bis) Dining room.

(47) Open air storage site for boards.

(48) Open air lot for scoria.

(49) Open air storage site for iron.

(50) Open air storage site for scrap iron.

(51) Open air storage site for iron.

(52) Open air storage site for coal.

(53) Sports fields.

(54) Plant railroad station.

(55). Danilov highway bridge and double track streetcar line.

(56) Frunze Textile Plant.

(57) Pervo Maya Textile Plant.

(58) Kalinin Textile Plant.

(59) Kozhujovo Railroad Station.

(60) Passenger pier.

(61) Freight pier.

(62) Avtozavodskaya ulitsa.

(63) Residences

(64) Residences

(65) Torpedo Club, swimming pool and bath

(66) Intersections where city policemen directed traffic.

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(67) The gardens, designated by cross-marks, separated the central walk from the roads.

(68) Central walk

(69) Railroad bridge

Products (See sketches Nos. 1 and 2 on pages 23 and 24.)

The official names, types and descriptions of the vehicles produced by the plant are as follows:

1. A seven-ton freight truck with rear wheel drive, trademark ZIL, type 150, constructed with an immobile wooden body, and an automatic, metal dump hoist. 25X1 It had a six-cylinder gasoline motor and carried large capacity gasoline tanks on both sides. Type 150 had standard foot and hand breaks 25X1 The truck also had an air brake controlled by a button on the dash board.

2. A truck, trademark ZIL, type 151, with greater freight capacity than type 150 This truck had a three-axle drive, the two rear axles having four wheels each. It had the same kind of breaks as type 150. Type 151 was constructed in three different models: 1) with an immobile, wooden body which had rims for attaching tarpaulins, and two lateral folding seats; 2) with a three-ton crane and controlling cab, mounted on the wooden body; 3) with a cab and a hook, which was attached to the chasis, for automatically hitching on and hauling trailers, artillery, and other vehicular equipment. The first two models also carried rear hooks. These models had a front reel, wound with cable, which could be attached to a tree or rock in order to pull the vehicle out of a mudhole. The model No. 1 usually carried seven or eight metal bottles held horizontally below the bodywork and above the chasis. These 25X1 bottles contained compressed gas it served as a reserve fuel supply for the 25X1 vehicle, along with the two lateral gas tanks. This was a military vehicle to which a platform for launching guided missles could be attached.

3. An autocar truck, trademark ZIL, type 154, with six wheels, and a rear motor 25X1 The exterior characteristics were universal

4. Luxury tourist car, trademark ZIL, type 110, with a gasoline motor; 25X1 An ambulance type 110 was also constructed; it had one rear door and two front doors.

5. Armoured truck, trademark ZIL; type unidentified with a powerful gasoline motor and 10 wheel, 25X1 three-axle drive. The steel armour had a thickness of about 20 m/m; the body was open. The truck had solid tires, however, 25X1 it was going to be equipped with special tires It was used for transporting

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personnel and towing vehicles. It had a rear hook and a cable reel in front. Its crew consisted of an official, a driver, and a radio operator. [redacted] in the cab, which had two lateral doors and one rear door which entered into the body, there were installed a radar apparatus and a radio. The truck was armed with four antiaircraft machine guns. The cabin had one front window, two lateral windows, and one rear window, all equipped with blinds. 25X1

6. Amphibian vehicle, with a rear propeller allowing a speed of 25 kilometers per hour by water. [redacted] 25X1

Raw Materials

The materials used by the plant were the following:

25X1

1. Iron, different kinds of steel, aluminum, mercury, copper, brass, lead, and gold and silver for bathes. [redacted] 25X1

2. The wood used was pine, Buk (beech), oak, and another class [redacted]

3. Plate glass consisting of two pieces of cristal separated by a sheet of celuloid to prevent breakage or shattering. [redacted] 25X1

4. Coal, oils, gasoline, petroleum, gas-oil, paint, acids, alcohols, and other products of this type. [redacted] 25X1
[redacted] insulating paint [redacted] 25X1
was used for coating the joints in electric wire installations and protecting them against acids. This product was called Bakelitoviy-Lak, (lacquer).

5. Almost all of these materials arrived at the plant by train or by truck, except for the wood which was transported by water way. There were reserves of all the raw materials. [redacted] 25X1

Power Supply

1. Power was supplied to the plant from the hydroelectric power house of Kashira, Moskovskaya oblast and the current was transformed by the station in building No. 32. The power supply was adequate, however, in case of a power shortage, the boiler room in building No. 28 could provide electric current to the plant. The usual voltage employed was 380.

Transportation

1. Railroads:

The installation was crossed in a direction northeast and southwest by beltline circular railroad with a double track. The railroad was not electric. From a small station next to the main track ran several standard-gauge spur lines which covered almost the entire installation, as seen in the sketch on page 25. The railroad equipment for service within the installation consisted of the following: six or seven small shunting steam locomotives,

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25X1

25 freight cars from 30 to 40 tons which were open, closed, or tank cars; three or four cranes for loading and unloading trains, which consisted of a platform above the railroad with a diesel motor, trademarked Yanvaretz. The transportation by truck and by train were almost equal, but train transportation was preferred for fuel and iron.

2. Highways and vehicles.

All the highways within the plant installations were asphalt and from eight to ten meters wide, with the exception of a two-lane highway which crossed the installation a north-south direction. It was similar to a bulevard and had a central walk and garden at each side. There was a traffic policeman, at each intersection. The roads were always open to traffic and were considered adequate. The vehicles used within the plant installation were the following:
1) Battery-driven cars and platforms were used within the buildings.
2) Light trucks, about 2.5 meters long, and constructed especially in this plant were used to haul three or four small trailers. These had a hauling capacity of 1.5 tons They did not carry any special cargo, but were used for transportation between nearby buildings. The light trucks numbered about 30, and the trailers, about 60.
3) For service outside the installation, about 800 trucks of better quality were used. Three-tons trucks were the most prevalent, but there were also some 15-ton trucks.

Plant Production Figures

the following figures represented the maximum production unless the possibilities of the plant and the number of workers were increased.

1) Truck type 150 - 300 per day
2) Truck type 151 - 150 per day
3) Armoured truck - 7 or 8 per day

4) Autocars type 154 - 25 per day
5) Luxury car type 110 - 7 or 8 per day, until 153, at which time production of this vehicle was decresed
6) Amphibian vehicles the production figures inferior to the figures for armoured trucks.
7) Bicycles - 2,000 per day
8) Refrigerators and cold storage room - large quantity per day.
9) Bodywork for small car trademarked MOSKVICH. which was constructed in the Malolitrazhnyy Plant in Moscow. the quantity was surficient to supply the plant.

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10) Gasoline motors for tractors. 25X1

11) Tower cranes trademarked UBK (Universal Tower Crane) The production of these cranes was variable, as it was dependent upon the orders for building construction. Each tower crane was operated by five electric motors: two for moving the cranes along the rails in opposite directions; one motor for moving the electric car; one, for operating the swinging jib; and another motor for lifting weights. These 100-MT cranes were 65 meters high and had an average horse power of 5.5 MT.

Working Conditions

25X1

The plant generally followed a work schedule of three eight-hour shifts, however the shifts decreased to seven hours. Plant personnel worked every day of the year, except sundays and the following holidays: January 1st, March 8th, a holiday for women only, May 1st and 2nd, June 18th which was a holiday in honor of aviation; November 7th and 8th, and December 5th. There were no definite vacation periods for the entire working force; vacations were given during the whole year. Workers with light jobs were given 20 days of vacation; those with ordinary jobs, 25, and those with difficult or unhealthy jobs were given 45 days of vacation. The average salary was from 800 to 900 rubles monthly, but was decreased about 100 rubles because of the discounts for the syndicates, for cleaning the streets, and the taxes for unmarried persons or married persons with less than three children. Those with three or more children did not have to pay this tax; they were not subsidized for the number of children they had. The sanitary conditions and ventilation were good. The Commission of Sanitation frequently sent inspectors to ascertain the general maintenance conditions. In each shop there was an infirmary with a permanent doctor. The large policlinic was inaugurated in 1956.

Plant Security

25X1

Security precautions existed only within the installation. guard posts around secret building No. 14 and secret building No. 13. Guards kept a continual watch next to the exterior wall and were reinforced during the night with more guards and a large number of watch dogs. All the streets in the installation were patrolled. these guards belonged to the MVD. there were many. During the night the guards were armed with rifles and pistols, but during the day, only with pistols. In order to enter the plant each worker needed a propusk. Access to all parts of the plant was permitted with the exception of restricted buildings No. 11, 13, and 14. Those who worked in restricted buildings entered them with the same propusk, as it carried the shop numbers. For personnel who did not work in the restricted buildings special permission from the chief of the particular office concerned, was needed in order to enter them. There were four outfits of firemen with their corresponding fire trucks. Their cuartel was in building No. 8. There was no observation tower, but there were alarms which could be set off in all the shops. Every building had glass cases, with hoses ready to be unrolled and turned on, large numbers of hand extinguishers, and fire hydrants. In each shop there were groups of workers trained in fire fighting. In building Nos 2 and 41 there were modern atomic bomb shelters. These shelters were surrounded by a thick cement wall and covered by a cement roof. Below and separated from the wall and the roof were many 3m x 3m rooms,

25X1

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separated one from another and with cement walls at least 70 cm. thick. The rooms had iron doors, with airtight rubber stripping, were 1.80 meters high, and formed an arch; they were bolted, shut. 25X1 the shelters were ventilated by means of a large fan which forced the air through filters.

Organization and Personnel

Machine shop 25X1 No. 52 in building No. 21 was organized in the following manner:

1 shop chief, engineer
1 chief of the technical section, engineer, aided by 1 assistant engineer, five or six technicians and draftsmen, and several typists.
1 chief of the electrical section
1 chief of the sheet metal section
1 chief of the tube section
1 chief of the tooling section

Each one of the section chiefs was a technician and had two attendants. Each attendant was in charge of four or five brigades which consisted of eight to ten men each. The shop organization also included a Party secretary, a secretary of the Komsomol, and a president of the shop labor 25X1 union. It was said that about 70,000 persons worked in this ZIL Plant and that about 80 percent were specialized workers.

Krylov (fnu) plant director, engineer
Bouko (fnu) head power engineer
Strogov (fnu) head engineer of the plant
Shlionov (fnu) chief engineer of machine assembly shop No. 52.
Polkovnikov (fnu) engineer in charge of tool shops.
Konnonov (fnu) construction engineer, in charge of the construction of plant buildings and workers' residences. 25X1

did not have any contact with them and did not know their names. A great number of chinese who had attended one or two courses in the apprentice school were working as apprentices in several shops. 25X1

decorations to encourage work, such as medals

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which were given for filling the quota, especially to those persons who did piece work. Absences from work were not frequent and those who were absent without justifiable reasons were punished.

Deficiencies, Improvements, and Increase in Production

There was a constant effort made to increase production on the part of the workers who were stimulated by patriotism and a desire to increase their incomes. Production increase was achieved not only through the workers efforts, but also through their initiative and frequent proposals for innovations in the machinery. In order to cultivate this atmosphere, there were weekly technical reunions in which engineers and specialized workers discussed new work methods.

25X1

The plant planned to modernize its machinery in relation with future possibilities. the plant could change its production from vehicles to military equipment within 24 hours

25X1

25X1

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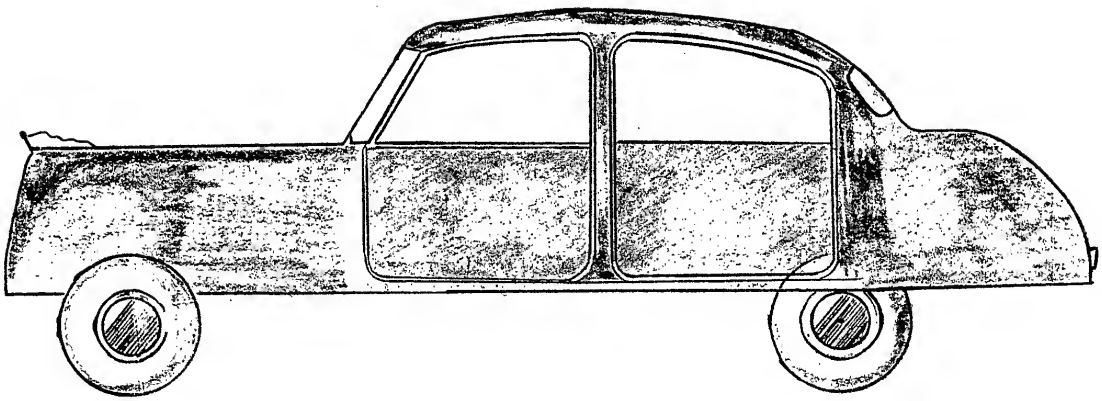
Sketch No. 1: ZIL 110



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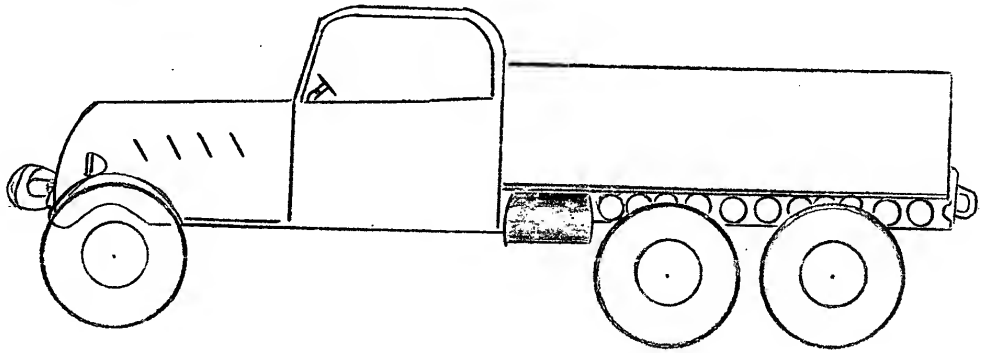
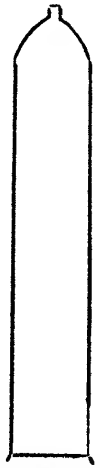
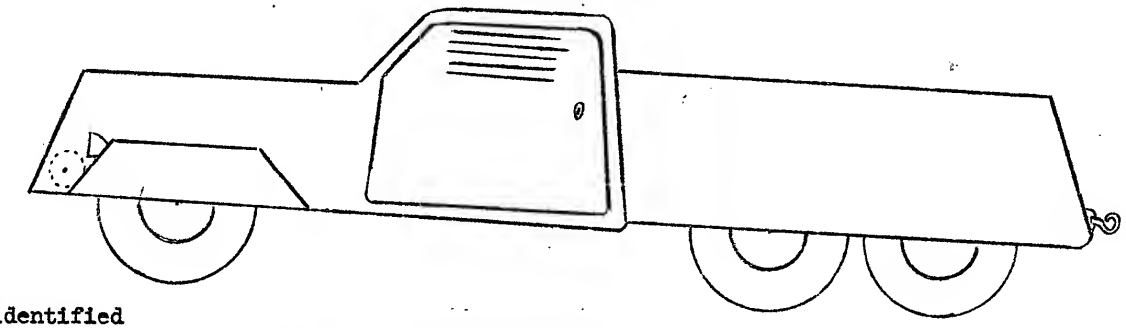
Sketch No. 2: Products of ZIL



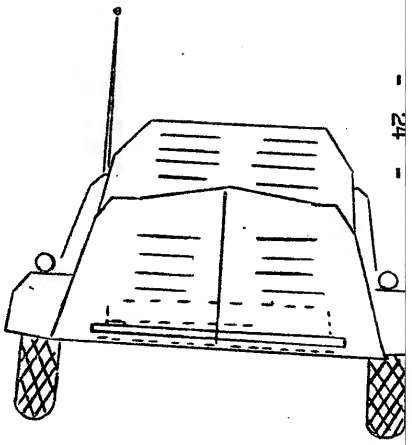
B. ZIL - 151.



A. Metal bottle of unidentified gas carried by ZIL - 151.



C. Armored truck (side view).



D. Armored truck (front view).

C-O-N-F-I-D-E-N-T-I-A-L

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C-O-N-F-I-D-E-N-T-I-A-L

Sketch No. 3: Layout of ZIL Automobile Plant

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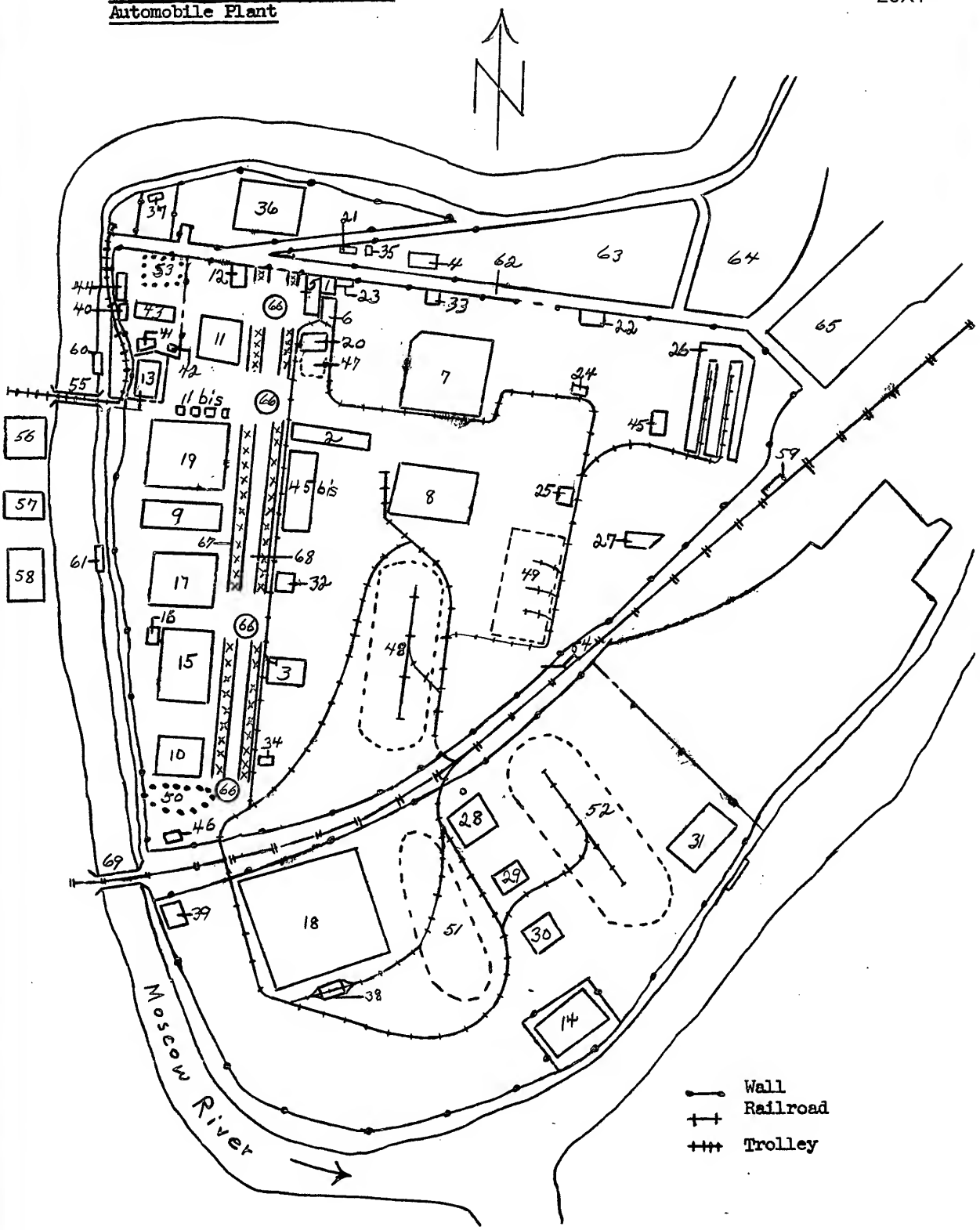

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